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ABSTRACT

The inconsistent and non-significant results in human early experience literature and suggestions of why results of early experience manipulations have not measured up to enthusiasm for this topic are summarized. Section headings are: the problem of subject selectivity; the problem of environmental specificity; the problem of stimulus specificity; organismic variables; the problem of experiential stability. A bibliography is listed. (NF)

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EARLY EXPERIENCE AND HUMAN DEVELOPMENT: METHODOLOGICAL COMPLEXITIES AND CAUTIONS

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The publication of Hunt's intelligence and experience in 1961 keynoted a resurgence in the study of the role of early experience upon human cognitive-intellectual development -- that is the development of higher order processes. Yet, in spite of ten plus years of extensive research on various aspects of early experience and human development since the publication of Hunt's volume; in spite of a number of applied efforts to facilitate human cognitive-intellectual development (Head Start, Sesame Street) the nagging question continues to arise: what have we really accomplished in terms of our understanding of the role of early experience upon human cognitive-intellectual development? A review of what we actually know and/or a review of the evidence on our ability to actually change human cognitive-intellectual development through applied early experience is at best a sobering and depressing experience.

In terms of the available research evidence, one major difficulty of course is the existence of some crucial gaps in our knowledge about what aspects of early experience are most relevant for cognitive-intellectual development. To quote from a recent review paper by White (1969) 'we are appallingly ignorant of .... 1) what infants are like, 2) what their world's are like, or 3) how environmental circumstances and resulting experiences affect the development of an infant's abilities". (White 1969, pg. 53). Even when evidence is available, the evidence more often than not is completely contradictory. Thus in terms of the question: when do the effects of living in a disadvantaged

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environment become manifest, one can state unequivocally, that these effects first become apparent at 4 months of age (Pasamanick, 1946) 11 months (Wachs, Uzgiris, & Hunt, 1971) not until 18 months of age but certainly before 3 years of age (Hindley, 1961) at age 3 but not earlier (Golden, Burns, Bridger, and Moss, 1971) and certainly not earlier than 3 years 8 months (Palmer, 1970). In terms of evidence on the role of early stimulation upon cognitive-intellectual development we also have a number of interesting discrepancies. For example, Williams and Scott, (1953) find early parental restrictiveness inhibiting infants intellectual development. On the other hand, Bayley and Shafer (1961) find parental restrictiveness associated with increased levels of development. A number of studies have indicated that early stimulation of orphanage-reared infants is beneficial to their intellectual development, (Casler, 1965; Dennis, & Sayegh, 1960). Evidence is also available however indicating that this type of stimulation has no significant effect at all upon the intellectual development of orphanage reared infants (Rheingold, 1956). There is evidence by Levenstein and Sunley (1967) which finds that training parents to verbally interact with their infants leads to increases in IQ on the order of 14 points when compared with a non-treated control group. However, one of my students (Holm, 1972) using the same procedure finds no significant differences between groups as a result of this type of training. One could go on with this type of inconsistency, but personally I have always found overkill to be a rather unasthetic phenomena.

In terms of applications of early experience to facilitate human development, the picture seems equally bleak. In a recent paper (Wachs, & Cucinotta, 1971) we reviewed evidence on the facilitative effects of specific early experiences in terms of whether the gains initially obtained through stimulation remain

stable over time. Of the six studies found in which some follow-up was attempted, only one (Solkoff, Yaffe, Weintraub, & Blaise, 1969) found differences between stimulated and non-stimulated groups remaining stable over time. (The paucity of follow-up studies being in itself a comment on inadequacies in this area). Evidence from studies attempting broad-based general stimulation of infant development show essentially the same pattern of findings: initial gains in IQ which tends to dissipate or decline during subsequent years (Long, cited in Fowler, 1969; Weikart, 1967). The generally unimpressive results of Project Head Start, are of course well known (Westinghouse Learning Corporation, 1969).

Overall, it would seem that whether one talks of research studies or applied efforts, the evidence seems to be that early experience manipulations with humans have not lived up to their original promise. An obvious question of course is why. It will be easy perhaps to say as some have said that early experience is really not relevant to human cognitive-intellectual development since this development is mainly due to genetic factors (Jensen, 1969). In general the available evidence suggest that this type of answer is probably not viable. There is too much data, using lower organisms as subjects, which shows clear cut, consistent and permanent effects of early experience upon such behaviors as exploration. (DeNelsky & Denenberg, 1967a, 1967b), learning, (Thompson & Herron, 1954; Kretch, Rosenzweig, & Bennett, 1962; McCall & Lester, 1969) and animal intelligence (Hymovitz, 1952; Schwartz, 1964) to simply dismiss early experience as irrelevant. While it is always dangerous to generalize across species, there seem to be no valid evoluationary or biological reasons

which suggest that early experience should be any less important for humans that it is for lower organisms. Indeed, as Hunt, (1961) has pointed out, early experience should be even more important for humans than for lower organisms. If this is so, we are still left with the question as to why the early experience results with humans have been so disappointing. In the author's opinion it is not early experience per se that is at fault but rather the way in which we have utilized early experience manipulations with humans. We have perhaps been so bewitched by the glamour of this method that we have both ignored or over-simplified certain principles and approaches to the problem of early experience. It is the author's contention that this ignoring and over-simplification has led to the generally disappointing results we have obtained. It is the aim of the present paper to specify some of the problem areas we have ignored or over-simplified in hopes of convincing early experience researchers. and educators to take a more realistic view of the potentials and limitations of early experience. Five specific problem areas in early experience research and application will be discussed.

I. THE PROBLEM OF SUBJECT SELECTIVITY

The first problem area to be discussed revolves around the subject selection procedures used in many studies of cognitive-intellectual development. The problem is best viewed by reference to a recent monograph by Rees and Palmer (1970) on factors related to changes in IQ. In their monograph, the authors (Rees and Palmer, 1970) refer to the five major longitudinal projects on which is based much of our knowledge on intellectual growth and the factors related to this growth (Fels Project, Child Research Counsel Project, Berkeley Growth Study, Berkeley Guidance Study, Oakland Growth Study). From the descriptions provided of these projects, it is obvious that for at least three (Fels, Child Research, and Berkeley Growth) the subjects utilized were both self-selected and

demographically homogeneous -- White, english speaking middle-class. An analysis of subject selection procedures of the remaining two projects (Berkeley Guidance, & Oakland Growth) indicate that even though subjects were picked randomly, the population from which these subjects were drawn was a very narrow one. Over and above the resulting fact that much of our knowledge concerning intellectual growth is thusly derived from a very narrow data base, this type of approach is especially detrimental when one attempts to analyze factors associated with intellectual development. As Weizmann (1971) has clearly pointed out, restricted population variance results in restricted correlation coefficients; for the correlational statistic to be its most powerful a complete rather than a truncated distribution is required. In a previous paper (Wachs, et al, 1971) we have implicated this use of homogeneous samples in the failure to find meaningful relationships between early experience and intellectual growth in the first two years of life. Happily, most recent research efforts have attempted to use a wider range of environmental background. Unfortunately, even with a wider range of backgrounds a second problem often becomes manifest.

II. THE PROBLEM OF ENVIRONMENTAL SPECIFICITY

A brief review of the field is enough to convince one that an overwhelming majority of studies, supposedly investigating the role of early experience upon cognitive-intellectual development are, in reality, investigating nothing more than the relationship between this type of development and demographic variables such as socio-economic status, parental income or parental educational level. While socio-economic status may be useful as a classification index, its use as an explanatory mechanism is clearly restricted. As has eloquently been pointed out by behavioral ethologists (Caldwell, 1970; Schoggin and Schoggin, 1971; Tulkin, 1972) differences in development as a function of differences

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in socio-economic status tell us nothing at all about the environmental variables responsible for these developmental differences. Because, until recently, our emphasis has been on this type of study we know literally nothing about the specific environmental and parental variables associated with cognitive growth and development. Until we begin to measure the actual, proximal environment of the child utilizing the observational tools developed by such workers as Caldwell and the Schoggins we will continue to restrict ourselves to such vague and useless terms as "cultural disadvantage" or "maximum environmental enrichment" as a substitute for actual knowledge. Ironically, even the original use for which socio-economic difference studies were apparently begun -- to assess the development of children raised in "good" and "bad" environments-has itself not been validated. As early as 1940, Wellman was warning that within a given socio-economic class, variations in home environment would be so great as to make impossible any firm conclusions about the adequacy of experiences a child is receiving. Subsequent research by Pavenstedt (1965) and Tulkan, (1968) among others has clearly varified this early caveat. In spite of which, since 1940, researchers have gone along apparently satisfied with second and even third-hand descriptions of the environment. It would not be too heretical to suggest that this problem of environmental specificity is the major reason for inconclusive and inconsistent findings in the area of early experience.

III. THE PROBLEM OF STIMULUS SPECIFICITY

If the lack of environmental specificity can be said to be the bane of early experience research, the problem of stimulus specificity can be said to do the same thing for attempts to apply early experiences so as to enhance development. Like our earlier problem, the problem of stimulus specificity

is not a new one. During the great nursery school controversy of the 30's and 40's it was found (Thompson, and Grusec, 1970) that some nursery school programs facilitated children's intellectual development; unfortunately, an equal number of nursery school programs were found to have no effect upon intellectual development. Since it was unclear as to exactly what the different nursery school programs were doing or not doing for children little could be concluded. In terms of more recent attempts to utilize early experience as a means of facilitating development through early education programs, we have unfortunately copied the same situation that existed in the 1930's and 1940's. The majority of applied early experience programs today present infants with large doses of hetergenous multi-dimensional stimulation. Rarely are attempts made to determine what aspects of this stimulation are effective in development and what aspects are ineffective. As a result, if we effect development we do not know why we had an effect: if we are unable to effect development we do not know why we had no effect. The end product is the dubious results noted earlier. We would not be too far off the mark if we restated an early definition of psychotherapy in terms of applied early experience programs so as to read "early education is an undefined technique, applied to unspecified problems, with unpredictable outcomes. For this extensive training is required." Until those interested in the application of early experience principles begin to set up specific stimulus programs for specified infants, it is doubtful if these early educational programs will either add too much to our knowledge on the role of early experience and behavior or allow us to say, with any degree of confidence, that we can facilitate cognitive-intellectual development through applications of early experience.

IV. ORGANISMIC VARIABLES

A fourth problem, organismic variability seems especially relevant to research in the area of early experience. Since the publication of intelligence and experience (Hunt, 1961) developmental researchers have become conscious of the problem known as match. Broadly stated, the concept of match implies that the organism is not a passive receiver of stimulation but rather that the developmental process is a function of both environment and organism. Yet how many developmental researchers have attempted to assess in some way the organism's level of functioning so as to attempt to match stimulation with organism. Amazingly, we continue to ignore organismic variables in spite of evidence for match such as Yarrows, (1963) finding of a correlation of +.69 between 6 month IQ and the degree to which parents attempted to adopt materials and experiences to their judgment of infant's capacity level; in spite of data by Schaefer (1966) showing changes in infant's intelligence during hospitalization being related to the infants level of activity; in spite of evidence showing that IQ changes of retarded children after a total push educational program were a function of the age of the child when started in the program (McCandless, 1964) and in spite of evidence by White and Held (1966) and Papousek (1969) that providing non-paced stimulation to an infant when the infant is too young to assimilate this stimulation results not in the facilitation of behavior but rather in retardation of behavior, whether these behaviors are attention (White and Held 1966) or learning (Papousek, 1969). This type of evidence makes the importance of organismic and constitutional factors in the developmental process seem obvious. In spite of which, we continue happily stimulating infants seemingly unconcerned as to whether the stimulation provided is over familiar, matched, or over-stimulating for the infant involved. In reviewing the habituation literature for infants, McCall (1969) has pointed out that any pattern of results could be

obtained, depending on what type of stimulation was used and what type of subject was studied. Unfortunately, the same conclusions can be made with regard to the early experience literature. Is it thus any wonder that we find inconsistencies in our data. Granted it is not easy to measure organismic variables. However, a start must be made if we are to make any sense out of our field of study.

V. THE PROBLEM OF EXPERIENTIAL STABILITY

A final problem, experiential stability, seems most relevant to attempts to apply early experience parameters to facilitate development. It would seem unfortunate that many individuals interested in early remediation have adopted what Klaus, & Gray, (1968) have called an "inoculation model" of early experience. Simply stated, the inoculation model implies that if a child is given a good dose of early experience he will thereafter be "immune to the effects of a low income home and of a school inappropriate to his needs". (Klaus, & Gray, 1968, pg. 63). It is perhaps the acceptance of this model which has led to the general lack of concern with long-term effects of early stimulation programs as we have noted earlier. Unfortunately, human cognitive-intellectual development apparently does not follow an inoculation model but is rather a continous process of organism--environment interaction. Is it thus any wonder that, as noted earlier, initially promising remediational results decline and disappear with the passage of time. In attempting to work with this problem, of stabilizing early experiences, we have suggested (Wachs, & Cucinotta, 1969) the adoption of Campbell's (Campbell & Janes, 1969) concept of reinstatement. Analagous to

the problem of early remediation, the reinstatement paradigm was developed by Campbell as a means of stabilizing the early learning experiences of young rats. Reinstatement, as defined by Campbell (Campbell & Janes, 1969) is a "periodic partial repetition of a experience such that it maintains the effects of the experience through time". We have suggested that if early experience effects are to be maintained, some type of reinstatement mechanism must be built into our training programs. One major objection to the use of reinstatement has been that much of the data on this concept has been based on specific training of organisms whereas, in most educational programs the training received by infants is generally diffuse and non-specific. However, in a recent study we have found that the stabilizing effects of reinstatement work as well for non-specific experiences as they do for specific ones. Our conclusion from this latter study was that a model showing how to stabilize early experience effects exists--it only remains to adopt this model.

CONCLUSIONS

What we have attempted to do in this paper is summarize some of the inconsistent and non-significant results that abound in the human early experience literature and suggest some reasons why the results of early experience manipulations have not measured up to our enthusiasm for this topic. This concern with the way early experience is handled is not a new one. Other workers in this area have shown similiar concerns (White, 1969; Fowler, 1969; Caldwell, 1970). Yet, in spite of continued concern with the handling of both research and application of early experience the same methodological errors continued to be repeated and repeated. In reviewing early experience research and application from this perspective, one feels a little of the despair felt by the prophet Jeremiah in the old testament. I can only conclude by saying that if those researchers and educators seriously interested in early experiences are not willing to take

a long hard look at [illegible] methodology and make needed changes, I am afraid that our only hope for the salvation of early experience as a discipline of study will be, like Jeremiah, to pray for a miracle.

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